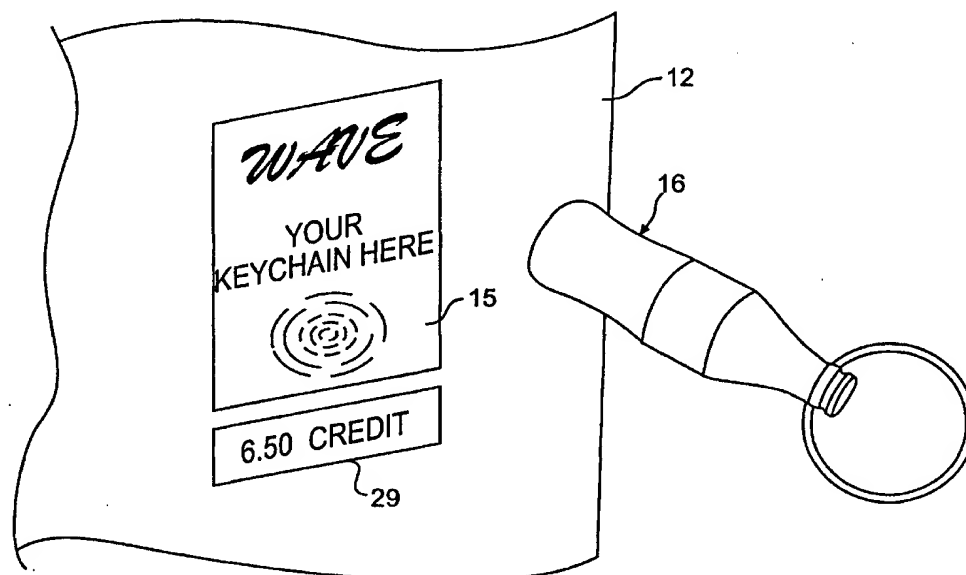




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(54) Title: VENDING MACHINE WITH TRANSPONDER INTERROGATOR



(57) Abstract

A vending machine includes a transponder interrogator. A customer carries a transponder embedded within an ornamental or useful item, such as a key chain ornament. When the customer desires to make a purchase from the vending machine, the customer presents the transponder to the transponder interrogator. The transponder is identified and a credit amount associated with that transponder is debited the purchase price. The system enables the vending machine operator to track the purchasing habits of the transponder user, and to provide instant incentives to purchasers using the transponder, based upon the customer's profile or purchasing habits.

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1 VENDING MACHINE WITH TRANSPONDER INTERROGATOR

2 BACKGROUND OF THE INVENTION3 Field of the Invention

4 The present invention relates to a consumer rewards
5 system and consumer purchasing-history tracking system
6 including a customer carried transponder unit. Also, the
7 present invention relates to a vending machine for dispensing
8 goods or services, which interacts with the transponder unit.

10 Description of the Background Art

11 Transponder - interrogator systems are known in the
12 existing arts. In U.S. Patent 3,914,762 to Klensch, a
13 transponder interrogator generates electromagnetic energy of
14 a predetermined frequency. This energy is received by a
15 proximate transponder tag and used to pulse modulate a
16 harmonically derived signal in accordance with a
17 predetermined digital identification code. The pulse
18 modulated signal is received by the transponder interrogator
19 and used to uniquely identify the transponder tag.

20 Further, it is known to employ a transponder -
21 interrogator system in a sales transaction. For example, in

1 U.S. Patent 5,072,380 to Randelman et al., a transponder
2 interrogator is located at a service station. The transponder
3 interrogator includes an antenna embedded near a gas pump
4 which transmits a constant electromagnetic field. A
5 transponder card is provided in a vehicle. When the vehicle
6 approaches the pump, the transponder is energized by the
7 electromagnetic field and responds with an identification
8 code, such as the VIN (vehicle identification number). The
9 transponder interrogator receives the identification code and
10 reports the same to a controller, which logs the customer's
11 transaction and bills the customer's account for the gas
12 purchased.

13 To date, a transponder - interrogator system has not
14 been employed in conjunction with a consumer rewards system
15 or a consumer purchasing-history tracking system. Moreover, a
16 transponder - interrogator system has not been integrated
17 into a vending machine having certain data handling
18 procedures, so as to reward purchasers with incentives, debit
19 a stored credit value within the transponder, and/or track
20 purchasing habits of individual customers.

21 SUMMARY OF THE INVENTION

22 Accordingly, it is an object of the present invention to
23 provide a beverage vending machine having a transponder
24 interrogator for interacting with a customer carried
25 transponder.

26 Another object of the present invention is to provide a

1 vending machine which identifies a transponder and rewards a
2 customer with free services or goods in response to a
3 predetermined condition.

4 Yet another object of the present invention is to
5 provide a vending machine which determines a credit amount
6 stored within a transponder and debits a purchase price of a
7 dispensed service or good from the credit amount.

8 Still another object of the present invention is to
9 provide a consumer purchasing-history monitoring system which
10 identifies a transponder and communicates with a database to
11 track purchasing habits of a customer associated with the
12 transponder and to reward the customer upon a predetermined
13 condition.

14 These and other objects of the present invention are
15 fulfilled by providing a beverage vending machine comprising:
16 a housing; a dispenser disposed within said housing for
17 dispensing a beverage; a transponder interrogator disposed
18 within said housing for reading a transponder unit; and a
19 controller connected to said transponder interrogator for
20 receiving data from said transponder interrogator, said
21 controller also being connected to said dispenser and being
22 able to cause said dispenser to dispense a beverage in
23 response to the received data.

24 Also, these and other objects of the present invention
25 are fulfilled by providing a beverage vending machine in
26 combination with a transponder, said combination comprising:
27 a housing; a dispenser disposed within said housing for

1 dispensing a beverage; a transponder, which is physically
2 disconnected from said housing, for transmitting data; a
3 transponder interrogator disposed within said housing for
4 reading said data of said transponder unit; and a controller
5 connected to said transponder interrogator for receiving data
6 from said transponder interrogator, said controller also
7 being connected to said dispenser and being able to cause
8 said dispenser to dispense a beverage in response to the
9 received data.

10 Moreover, these and other objects are fulfilled by a
11 method of operating a vending machine, said method comprising
12 the steps of: providing a vending machine with a dispenser
13 and a transponder interrogator disposed within a housing;
14 providing a database; providing a transponder, which is
15 physically disconnected from the housing, and which includes
16 a memory for storing identifying data; transmitting an
17 activation signal from the transponder interrogator to the
18 transponder; transmitting the identifying data from the
19 transponder to the transponder interrogator; using the
20 identifying data to access transponder data in the database;
21 and determining whether the accessed transponder data meets a
22 predetermined condition, and communicating a dispense signal
23 from the transponder interrogator to the dispenser if the
24 predetermined condition is met.

25 Furthermore, these and other objects are fulfilled by a
26 method of operating a vending machine, said method comprising
27 the steps of: providing a vending machine with a dispenser

1 and a transponder interrogator disposed within a housing;
2 providing a transponder, which is physically disconnected
3 from the housing, and which includes a memory for storing
4 credit amount data; transmitting an activation signal from
5 the transponder interrogator to the transponder; transmitting
6 the credit amount data from the transponder to the
7 transponder interrogator; and communicating a dispense signal
8 from the transponder interrogator to the dispenser if the
9 credit amount data, received by the transponder interrogator,
10 exceeds a purchase price.

11 Furthermore, these and other objects are fulfilled by a
12 consumer data tracking and reward system comprising: a
13 plurality of point of potential sale or interest terminals; a
14 transponder for interacting with said terminals; a
15 communication medium connecting each of the terminals to an
16 external database; and a processor, associated with said
17 external database, monitoring data sent by said terminals
18 representing the interaction of said transponder with said
19 terminals, and permitting a reward to be issued upon a
20 predetermined condition.

21 Furthermore, these and other objects are fulfilled by a
22 method of tracking consumer data comprising the steps of:
23 providing a plurality of point of potential sale or interest
24 terminals, a transponder for interacting with any of said
25 terminals, and an external database; interacting the
26 transponder with a one or more of the terminals; sending
27 identifying information concerning an interacted transponder

1 to the external database; tracking consumer data in the
2 external database relating a person associated with the
3 transponder; and rewarding the person, if the consumer data
4 satisfies a predetermined condition.

5 Further scope of applicability of the present invention
6 will become apparent from the detailed description given
7 hereinafter. However, it should be understood that the
8 detailed description and specific examples, while indicating
9 preferred embodiments of the invention, are given by way of
10 illustration only, since various changes and modifications
11 within the spirit and scope of the invention will become
12 apparent to those skilled in the art from this detailed
13 description.

14 BRIEF DESCRIPTION OF THE DRAWINGS

15 The present invention will become more fully understood
16 from the detailed description given hereinbelow and the
17 accompanying drawings which are given by way of illustration
18 only, and thus are not limitative of the present invention,
19 and wherein:

20 Figure 1 is a perspective view of a customer presenting
21 a transponder to a beverage vending machine, in accordance
22 with the present invention;

23 Figure 2 is a block diagram of circuitry used in the
24 transponder;

25 Figure 3 is a block diagram of circuitry used in a
26 transponder interrogator;

1 Figure 4 is a block diagram illustrating signaling
2 between the transponder and transponder interrogator of
3 Figures 2 and 3;

4 Figure 5 is a close-up perspective view of the
5 transponder, embedded in a promotional key chain, being waved
6 in front of the transponder interrogator; and

7 Figure 6 is a block diagram illustrating a consumer
8 purchasing-history monitoring system and consumer rewards
9 system in accordance with the present invention.

10 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

11 Referring in detail to the drawings and with particular
12 reference to Figure 1, a beverage vending machine 10, in
13 accordance with the present invention, includes a coin and
14 bill accepting unit 11 located on a front panel 12 thereof.
15 The vending machine also includes conventional beverage
16 selector buttons 13 and a dispensing chute 14 for retrieving
17 a purchased beverage container. Located within or behind the
18 front panel 12 is a transponder interrogator 15. As will be
19 more fully described hereinafter, the transponder
20 interrogator 15 interacts with a transponder 16, carried by a
21 customer C of the vending machine 10.

22 The vending machine 10 has conventional payment
23 components, such as the coin and bill-accepting unit 11,
24 and/or a smart card reader, so that the vending machine 10
25 may be operated by conventional payment methods. It should be
26 appreciated that a modified vending machine having no coin or

1 bill-accepting unit 11 or smart card reader could be
2 provided. Such a modified vending machine would be dedicated
3 to transactions initiated by the transponder 16 and would not
4 operate with coins, bills, or smart cards. Also, the present
5 invention could be employed in conjunction with a vending
6 machine for dispensing beverages into cups, or in conjunction
7 with vending machines for dispensing other goods or services,
8 such as candies, cigarettes, fare cards, stamps, sandwiches,
9 gaming credits, video/pinball play credits, etc.

10 Referring to Figure 2, the transponder 16 includes a
11 receiver/transmitter unit 17, a transponder controller unit
12 18, a memory unit 19, and a power supply unit 20. The memory
13 unit 19 includes a program of operation for the transponder
14 controller unit 18. The units 17, 18, 19 and 20 of the
15 transponder 16 are operational units. In constructing the
16 actual circuitry of the transponder 16, one or more
17 operational units may be performed by the same circuitry
18 component.

19 Referring to Figure 3, the transponder interrogator 15
20 includes an activator/transmitter/receiver unit 21, an
21 interrogator controller unit 22, a memory unit 23, and an
22 interface unit 24. The memory unit 23 includes a program of
23 operation for the interrogator controller unit 22. The
24 interrogator controller unit 22 of the transponder
25 interrogator 15 communicates with a dispenser 25 provided
26 within the vending machine 10. Also, the interface unit 24
27 communicates with an external database 26 remote from the

1 vending machine 10. Again, the units 21, 22, 23 and 24 of the
2 transponder interrogator 15 are operational units, the
3 operations of which may be performed by common circuitry.

4 Now, with reference to Figure 4, the operation of the
5 interrogator - transponder system will be described. The
6 activator/transmitter/receiver unit 21 includes a coil for
7 producing an electromagnetic field 27 having a predetermined
8 frequency. The electromagnetic field 27 emanates some
9 predetermined distance away from the front panel 12 of the
10 vending machine 10 depending upon the power supplied to the
11 activator/transmitter/receiver unit 21. For example, the
12 electromagnetic field 27 might emanate six inches to five
13 feet from the front panel 12. This electromagnetic field is
14 normally provided by the activator/transmitter/receiver unit
15 21 in anticipation of a customer wishing to use the
16 transponder 16 to make a purchase.

17 The receiver/transmitter unit 17 of the transponder 16
18 includes a coil for receiving the electromagnetic field 27,
19 when the transponder is placed in the vicinity of the front
20 panel 12 of the vending machine 10 by the customer C. The
21 received electromagnetic field 27 is supplied to the power
22 supply unit 20, which may be in the form of a capacitor. The
23 power supply unit 20 powers the transponder controller unit
24 18 and the memory unit 19.

25 When the transponder controller unit 18 is initially
26 powered, it executes a programming step whereby it
27 automatically retrieves a code from the memory unit 19. The

1 code is sent from the transponder controller unit 18 to the
2 receiver/transmitter unit 17, whereupon the
3 receiver/transmitter unit 17 responds by sending out this
4 code via an electromagnetic signal 28.

5 The code stored in the memory unit 19 is a unique
6 identifying code. In other words, a plurality of transponders
7 would be distributed or sold to members of the public,
8 wherein each transponder's memory unit 19 would have a pre-
9 stored unique identifying code. An electrically erasable,
10 programmable, read only memory (EEPROM) is particularly well
11 suited for the memory unit 19. Also, it is important to note
12 that the transponder 16 does not necessarily need a power
13 supply unit 20. The receiver/transmitter unit 17, transponder
14 controller unit 18 and memory unit 19 can be powered directly
15 from the received electromagnetic field 27.

16 The electromagnetic signal 28 is received by the
17 activator/transmitter/receiver unit 21 of the transponder
18 interrogator 15. The received signal is then communicated to
19 the interrogator controller unit 22. The interrogator
20 controller unit 22 relays the identifying code to the
21 interface unit 24. The interface unit 24 relays the
22 identifying code to a central, external database 26.
23 Communications between the interface unit 24 and the external
24 database 26 may be accomplished via a hardwired connection,
25 such as by using telephone lines. It is also envisioned that
26 the communications could occur over a wireless medium, such
27 as by cellular transmissions, microwave signals, or satellite

1 communications. Preferably, an encryption scheme would be
2 applied to the communications to protect privacy and to
3 reduce the likelihood of fraud.

4 It is also envisioned that all or part of the
5 communication would occur over the internet. The
6 communication of the identifying code could be sent, via an
7 e-mail, to the central, external database 26. The vending
8 machine 10 could also include audio/video capture and display
9 devices. If such devices are included, the email sent to the
10 central, external database 26 could include an image or sound
11 bite of the customer. Also, the signal returned from the
12 central, external database 26 could include images and/or
13 sounds for presentation to the customer.

14 The external database 26 has the ability to track the
15 purchase times, prices, and locations for each transaction
16 relative to each individual transponder 16. If the
17 transponder 16 is registered to an individual customer C,
18 then the transactions of the individual transponder 16 can be
19 used to approximate the purchasing habits for that individual
20 customer C.

21 Referring back to Figure 4, the interrogator controller
22 unit 22 must now decide whether the customer's transponder 16
23 is authorized to cause a vending operation. If so, the
24 interrogator controller unit 22 will issued a vend signal to
25 the dispenser 25 causing the dispenser 25 to vend a beverage.
26 If not, the interrogator controller unit 22 will not issue a
27 vend signal to the dispenser, but rather will issue a command

1 to a display 29 (See Figure 5) located on the front panel 12
2 of the vending machine 10, informing the customer C that the
3 transponder 16 is not enabled to cause a vending operation.

4 Now, the manner by which the interrogator controller
5 unit 22 decides whether a vending operation will be allowed
6 will be described. In a first embodiment, the memory unit 19
7 of the transponder 16 stores a credit amount. The credit
8 amount relates to the purchasing power of the transponder.
9 For example, the transponder 16 could have ten dollars worth
10 of credit. The credit amount could be initialed stored in the
11 transponder 16 at the time the customer C takes possession of
12 the transponder 16, or the credit amount could be
13 subsequently added to the transponder 16 at a special credit
14 purchasing machine or at the vending machine.

15 In the first embodiment, the electromagnetic signal 28,
16 initially sent by the receiver/transmitter unit 17 includes
17 not only the identifying code, but also this credit amount.
18 The interrogator controller unit 22 evaluates the credit
19 amount. If the credit amount is greater than the purchase
20 price of the beverage selected by the customer C, the
21 purchase is allowed. If not, the purchase is denied.
22 Referring to Figure 5, the display 29 is a particularly
23 advantageous way of informing the customer C of the remaining
24 credit amount stored within the transponder 16.

25 Once the interrogator controller unit 22 establishes
26 that the credit amount exceeds the purchase price, the
27 interrogator controller unit 22 transmits an electromagnetic

1 signal 30. The electromagnetic signal 30 informs the
2 transponder 16 of its new credit amount, which equals the old
3 credit amount minus the purchase price. The new credit amount
4 is received by the receiver/transmitter unit 17, processed by
5 the transponder controller unit 18, and stored in the memory
6 unit 19. Thus, the transponder 16 is a read/write type of
7 transponder.

8 Once stored, the transponder controller unit 18 causes
9 the receiver/transmitter unit 17 to transmit the unique
10 identification code and the new credit amount. When the
11 interrogator controller unit 22 verifies that the new credit
12 amount is stored within the memory unit 19 of the transponder
13 16, the interrogator controller unit 22 causes a dispense
14 signal to be sent to the dispenser 25.

15 Now, a second embodiment by which the interrogator
16 controller unit 22 decides whether a vending operation will
17 be allowed will be described. In the second embodiment, the
18 external database 26 stores the credit amounts associated
19 with the individual, uniquely identified, transponders 16.
20 Therefore, the credit amount, which was stored in the memory
21 unit 19, in the first embodiment, will now be stored in the
22 external database 26, and the transponder 16 can be a read-
23 only type of transponder.

24 The second embodiment has the following advantages.
25 First, the memory unit 19 of the transponder 16 can be a
26 read-only memory and can be smaller and less expensive.
27 Second, when the transaction data is being sent to the

1 external database 26, as described above, the external
2 database 26 can respond with the credit amount associated
3 with the identified transponder 16. Third, storing the credit
4 amount in the external database eliminates the possibility of
5 fraudulent purchases being made by using an unauthorized
6 electronic device which replicates the transponder's credit
7 signals. One drawback is that when the external database 26
8 is inaccessible, the purchase of the beverage using the
9 transponder 16 will not be allowed, since the interrogator
10 controller unit 22 will be unable to verify that a sufficient
11 credit amount exists. All other aspects of the dispensing
12 operation are similar to those describe in relation to the
13 first embodiment.

14 In both the first and second embodiments, the external
15 database 26 can be, or is, contacted and supplied with the
16 unique identifying code for the transponder 16, respectively.
17 One particular advantage of contacting the external database
18 26 is that data can be transmitted from the external database
19 26 to the interrogator controller unit 22. The interrogator
20 controller unit 22 can evaluate this data and reward the
21 customer with incentives.

22 For example, if the present purchase is the first time
23 the customer C has used the transponder 16, the interrogator
24 controller unit 22 can reward the customer with a free
25 beverage, or a reduced price beverage (i.e. debit the stored
26 credit amount some value less than the purchase price). As
27 another example, the interrogator controller unit 22 can

1 reward the customer C with a free beverage, or reduced price
2 beverage, after a predetermined number of beverages have been
3 purchased using a that particular transponder 16. It is also
4 envisioned that a random number generator could be employed,
5 whereby random transponder-using customers C are rewarded
6 with free beverages.

7 Another advantage of the external database 26 is that
8 each purchaser of a transponder 16 can be registered. During
9 registration the purchaser of the transponder submits various
10 information, such as their name, address, age, birth date,
11 occupation, etc. Such information can be used to track the
12 purchasing habits of particular population segments, and can
13 prove useful for promotions and advertising purposes. As an
14 incentive for filling out the registration information, the
15 external database 26 might analyze the birth date, associated
16 with the registered transponder owner, and if the birth date
17 corresponds to the present date, the interrogator controller
18 unit 22 would reward the customer C with a free beverage.

19 It is also envisioned that the memory unit 19, within
20 the transponder 16, could store transaction data (e.g. track
21 the number of times the transponder 16 has been used to make
22 a purchase), and/or customer registration data (e.g. name,
23 birth date). In this embodiment, the transponder 16 would
24 transmit this data directly to the transponder interrogator
25 15 when a purchase is to be made. The transponder
26 interrogator 15 would process the data, as described above,
27 and reward the customer C with free beverages as appropriate.

1 In this embodiment, the vending machine 10 would not need to
2 be linked to the external database 26.

3 It is envisioned that the transponders 16 would be
4 reusable and embedded in ornamental items or useful items,
5 such as a key chain attachment, a fob, a watch, a ring, a
6 necklace locket, other jewelry, a small flashlight, a pocket
7 knife, or various other types of frequently carried items.
8 These items would be sold to the public, or given to the
9 public as a promotion.

10 A machine would be provided for supplementing a credit
11 amount to the transponder 16, this making the transponder 16
12 reusable. The machine would include a money acceptance and
13 verification section and would either establish communication
14 with the transponder 16 in order to rewrite the credit amount
15 stored within the memory unit 19, or contact the external
16 database 26 and rewrite the credit amount stored therein.

17 It would also be possible to use the vending machine 10
18 to rewrite the credit amount stored within the memory unit 19
19 or stored within the external database 26. Under this
20 approach, a customer C would insert money into the coin or
21 bill acceptor 11 or insert a smart card into the smart card
22 reader, present the transponder 16 to the transponder
23 interrogator 15, and use selection buttons to instruct the
24 vending machine 10 to credit the customer's transponder 16 a
25 desired amount.

26 As an alternative to a reusable transponder 16, the
27 transponders 16 could be disposable. In this alternative,

1 transponders 16, having a pre-stored credit amount, would be
2 sold to the public. When the credit amount of the transponder
3 16 was depleted through purchases, the transponder 16 would
4 be discarded.

5 Now, with reference to Figure 6, a broader aspect of the
6 present invention, concerning the processing of consumer
7 data, will be described. In the broader aspect of the present
8 invention, the purchasing power of the transponder 16 is not
9 required. In other words, the transponders 16 can include a
10 credit amount associated therewith, as described in relation
11 to Figures 1-5 above, or the transponders 16 may simply be
12 used as an identification tool to uniquely identify the
13 customer owning the transponder.

14 In Figure 6, transponder interrogators 15 are placed in
15 terminals at various points of potential sale or interest.
16 For example, the terminals could be placed at various cash
17 registers C_w , vending machines V_x , automatic teller machines
18 (ATMs) A_y , and points of customer interest I_z . The terminals
19 could be contained in separate housings or integrated into
20 existing structures associated with the various points of
21 potential sale or interest. The points of potential sale or
22 interest would be dispersed over a large network which could
23 spread within a city, over a state, or entirely across the
24 United States and/or foreign countries.

25 The cash registers C_w would be typical cash registers,
26 as located at grocery stores, convenience stores, department
27 stores, gas stations, etc. The ATMs A_y could be located at

1 banks or at remote service areas, such as inside shopping
2 malls, at amusement parks, etc. The vending machines V_x could
3 be beverage vending machines, as well as vending machines for
4 dispensing other goods or services, such as candies,
5 cigarettes, fare cards, stamps, sandwiches, gaming credits,
6 video/pinball play credits, etc. The points of customer
7 interest I_z could be parks, fairs, concert pavilions, car
8 sales lots, real estate agencies, travel agencies, etc.

9 Each terminal would be linked to an external processor P
10 and database D, via a communication medium M. The
11 communication medium M could be hardwired or wireless, such
12 as via telephone lines, the internet, cellular channels,
13 satellite channels, microwave channels, etc. Preferably, an
14 encryption scheme would be applied to the communications
15 occurring over the communication medium M to protect privacy
16 and to reduce the likelihood of fraud.

17 The processor P would receive information from a
18 terminal when a transponder 16 is presented to that terminal.
19 The information would uniquely identify the transponder 16
20 and could also indicate transaction information. The
21 transaction information could include the location of the
22 terminal, the date and time the transponder 16 was presented,
23 the amount of dollars spent, the goods or service purchased,
24 etc.

25 The processor P would access a look-up table, in the
26 database D, associating the uniquely identified transponder
27 16 to a person, presumably the registered owner of the

1 transponder 16. As information is received from the various
2 terminals, the processor P logs the information into the
3 database D. This information could be useful in tracking a
4 customer's purchasing habits, and could be used in market
5 research, advertisements, and promotions.

6 A customer would have the opportunity to present their
7 transponder 16 to any or all of the terminals. In order to
8 entice the customer to present their transponder 16, a
9 program would be established to reward customers based upon
10 the purchases made at various points of potential sale or
11 interest, and/or the mere act of presenting the transponder
12 16 at the various points of potential sale or interest.

13 One such program would be an instant rewards program. In
14 the instant rewards program, customers could receive reduced
15 prices on one or more of the products purchased. Also, as
16 part of the instant rewards program, the processor P could
17 communicate back to the terminals. If the customer's
18 transaction met a predetermined condition, a reward would be
19 given to the customer on the spot or at a later date. For
20 example, if the customer purchases a case of beverages and
21 two bags of chips, when using the transponder 16, the
22 customer is given a free T-shirt or a hat. The predetermined
23 condition could also be met on a random basis, regardless of
24 the purchases made. For example, if a customer makes a
25 purchase and presents the transponder 16, the customer could
26 possibly win a vacation trip to Hawaii, a stereo, etc. The
27 reward would be presented, or indicated, to the customer on

1 the spot, or indicated to the customer at a later date, such
2 as by mail.

3 Another such program would be a points reward program.
4 In the points reward program, it is not necessary for the
5 processor P to communicate back to the terminals. Points
6 would be rewarded to the customers each time the transponder
7 16 is presented to a terminal. Points could be awarded for
8 the simple act of presenting the transponder 16 to one of the
9 terminals, and/or for the act of making a purchase at one of
10 the terminals. The number of points could be based upon the
11 location of the terminal, the product or service purchased or
12 the amount spent. For example, five points could be awarded
13 for the presentation of the transponder 16; one point could
14 be awarded for each dollar spent; and ten points could be
15 awarded for the purchase of a specified product. In addition,
16 the points system could have certain bonus incentives. For
17 example, purchases made at a certain location or at certain
18 hours could earn double points; every tenth purchase could
19 earn triple points; or bonus points could be awarded
20 randomly.

21 Points could be redeemed for rewards in the form of
22 money, goods, or services. In one embodiment, the rewards
23 could be given automatically to the customer, at the point of
24 potential sale or interest, once sufficient points are
25 accumulated. In this embodiment, the processor P communicates
26 back to the terminals to inform a store clerk to reward the
27 customer on the spot, e.g. present the customer with a T-

1 shirt, a coupon, or a gift certificate.

2 In another embodiment, the customer can select from
3 various rewards for various attained point levels. Selection
4 could occur at one of the terminals, by responding to a
5 catalogue order form, or over the internet. For example, a
6 customer could visit a web site, enter their transponder's
7 serial number, enter a PIN number, access their accumulated
8 points balance, and then select from various possible
9 rewards.

10 The invention being thus described, it will be obvious
11 that the same may be varied in many ways. Such variations
12 are not to be regarded as a departure from the spirit and
13 scope of the invention, and all such modifications as would
14 be obvious to one skilled in the art are intended to be
15 included within the scope of the following claims. For
16 example, the external database 26 may be provided within the
17 vending machine 10. In this instance, the vending machine 10
18 would be a standalone system, and would not need to resort to
19 the use of hardwired or wireless communication channels in
20 order to access information concerning the transponder 16.

21 Please note, "Coca-Cola"TM and the Contour Bottle Shape
22 used in the drawings are registered trademarks of The Coca-
23 Cola Company.

What is Claimed Is:

- 1 1. A beverage vending machine comprising:
2 a housing;
3 a dispenser disposed within said housing for dispensing
4 a beverage;
5 a transponder interrogator disposed within said housing
6 for reading a transponder unit; and
7 a controller connected to said transponder interrogator
8 for receiving data from said transponder interrogator, said
9 controller also being connected to said dispenser and being
10 able to cause said dispenser to dispense a beverage in
11 response to the received data.
- 1 2. The beverage vending machine according to claim 1,
2 further comprising:
3 a memory having pre-stored data connected to said
4 controller wherein said controller uses the data received
5 from said transponder interrogator to access said pre-stored
6 data and causes said dispenser to dispense a beverage when
7 the accessed data meets a pre-determined condition.
- 1 3. The beverage vending machine according to claim 2,
2 wherein said memory is located outside said housing.

1 4. The beverage vending machine according to claim 2,
2 wherein said memory is located within said housing.

1 5. A beverage vending machine in combination with a
2 transponder, said combination comprising:

3 a housing;

4 a dispenser disposed within said housing for dispensing
5 a beverage;

6 a transponder, which is physically disconnected from
7 said housing, for transmitting data;

8 a transponder interrogator disposed within said housing
9 for reading said data of said transponder unit; and

10 a controller connected to said transponder interrogator
11 for receiving data from said transponder interrogator, said
12 controller also being connected to said dispenser and being
13 able to cause said dispenser to dispense a beverage in
14 response to the received data.

1 6. The combination according to claim 5, wherein said
2 transponder is embedded in a key chain ornament.

1 7. The combination according to claim 5, wherein said
2 transponder interrogator outputs an electromagnetic
3 activation signal, and said transponder receives power said
4 electromagnetic activation signal.

1 8. The combination according to claim 5, wherein said
2 transponder includes a read-only memory.

1 9. The combination according to claim 5, wherein said
2 transponder interrogator includes a transmitter for
3 transmitting data to said transponder, said transponder
4 includes a read-write memory and receives said data and
5 alters the contents of said read-write memory in response to
6 said data.

1 10. A method of operating a vending machine, said method
2 comprising the steps of:

3 providing a vending machine with a dispenser and a
4 transponder interrogator disposed within a housing;

5 providing a database;

6 providing a transponder, which is physically
7 disconnected from the housing, and which includes a memory
8 for storing identifying data;

9 transmitting an activation signal from the transponder
10 interrogator to the transponder;

11 transmitting the identifying data from the transponder
12 to the transponder interrogator;

13 using the identifying data to access transponder data in
14 the database; and

15 determining whether the accessed transponder data meets
16 a predetermined condition, and communicating a dispense
17 signal from the transponder interrogator to the dispenser if

18 the predetermined condition is met.

1 11. The method according to claim 10, wherein the good or
2 service is a container filled with a beverage.

1 12. The method according to claim 11, wherein the accessed
2 transponder data is a credit amount associate with the
3 identifying data of the transponder, and wherein said step of
4 determining includes ascertaining whether the credit amount
5 exceeds a purchase price, and if so, dispensing a good or
6 service from the vending machine.

1 13. The method according to claim 11, wherein the accessed
2 transponder data is customer profile data associated with the
3 identifying data, the customer profile data including a
4 number of purchases made by the customer, and wherein said
5 step of determining includes ascertaining whether the number
6 of purchases made equals a predetermined number, and if so,
7 dispensing a good or service from the vending machine.

1 14. The method according to claim 10, wherein the database
2 is external to the housing and communications between the
3 database and the transponder interrogator take place via a
4 satellite.

1 15. A method of operating a vending machine, said method
2 comprising the steps of:

3 providing a vending machine with a dispenser and a
4 transponder interrogator disposed within a housing;

5 providing a transponder, which is physically
6 disconnected from the housing, and which includes a memory
7 for storing credit amount data;

8 transmitting an activation signal from the transponder
9 interrogator to the transponder;

10 transmitting the credit amount data from the transponder
11 to the transponder interrogator; and

12 communicating a dispense signal from the transponder
13 interrogator to the dispenser if the credit amount data,
14 received by the transponder interrogator, exceeds a purchase
15 price.

1 16. The method according to claim 15, wherein the memory of
2 the transponder also includes identifying data, and said step
3 of transmitting the credit amount data from the transponder
4 to the transponder interrogator also includes transmitting
5 the identifying data to the transponder interrogator; said
6 method further comprising the steps of:

7 providing a database;

8 using the identifying data, received by the transponder
9 interrogator, to access transponder data in the database;
10 and

11 determining whether the accessed transponder data meets
12 a predetermined condition, and communicating a dispense
13 signal from the transponder interrogator to the dispenser if

14 the predetermined condition is met.

1 17. The method according to claim 16, wherein the
2 transponder data is customer profile data associated with the
3 identifying data, the customer profile data including a
4 number of purchases made by the customer, and wherein said
5 step of determining includes ascertaining whether the number
6 of purchases made equals a predetermined number, and if so,
7 dispensing a container filled with a beverage from the
8 vending machine.

1 18. The method according to claim 16, wherein the database
2 is external to the housing and communications between the
3 database and the transponder interrogator take place via a
4 satellite.

1 19. The method according to claim 15, wherein the memory of
2 the transponder also includes identifying data, and said step
3 of transmitting the credit amount data from the transponder
4 to the transponder interrogator also includes transmitting
5 the identifying data to the transponder interrogator; said
6 method further comprising the steps of:

7 analyzing the identifying data using the transponder
8 interrogator;

9 determining whether the identifying data meets a
10 predetermined condition; and

11 communicating a dispense signal from the transponder

12 interrogator to the dispenser if the predetermined condition
13 is met.

1 20. The method according to claim 19, wherein the
2 identifying data includes a number of purchases made by the
3 customer, and wherein said step of determining includes
4 ascertaining whether the number of purchases made equals a
5 predetermined number, and if so, dispensing a container
6 filled with a beverage from the vending machine.

1 21. A consumer data tracking and reward system comprising:
2 a plurality of point of potential sale or interest
3 terminals;
4 a transponder for interacting with said terminals;
5 a communication medium connecting each of the terminals
6 to an external database; and
7 a processor, associated with said external database,
8 monitoring data sent by said terminals representing the
9 interaction of said transponder with said terminals, and
10 permitting a reward to be issued upon a predetermined
11 condition.

1 22. The method according to claim 21, wherein at least one
2 of said terminals is located in a different state of the
3 United States than another of said terminals.

1 23. The method according to claim 21, wherein at least one
2 of said terminals is located in a different city than another

3 of said terminals.

1 24. The method according to claim 21, wherein at least one
2 of said terminals is located at a cash register, an automatic
3 teller machine, or a vending machine.

1 25. The method according to claim 21, wherein said external
2 database is connected to the internet.

1 26. A method of tracking consumer data comprising the steps
2 of:

3 providing a plurality of point of potential sale or
4 interest terminals, a transponder for interacting with any of
5 said terminals, and an external database;

6 interacting the transponder with a one or more of the
7 terminals;

8 sending identifying information concerning an interacted
9 transponder to the external database;

10 tracking consumer data in the external database relating
11 a person associated with the transponder; and

12 rewarding the person, if the consumer data satisfies a
13 predetermined condition.

1 27. The method according to claim 26, wherein said step of
2 rewarding the person includes providing money, goods or
3 services to the person at one of terminals, after the
4 transponder has been interacted with the one terminal.

1 28. The method according to claim 26, further comprising the
2 step of:

3 sending purchasing information from the terminals
4 interacting with the transponder, concerning purchases made
5 by the person, to the external database, wherein said step of
6 tracking consumer data includes monitoring the purchasing
7 information.

1 29. The method according to claim 28, wherein the
2 predetermined condition is accumulation of purchase amounts
3 above a given total, or accumulation of purchases of given
4 goods or services.

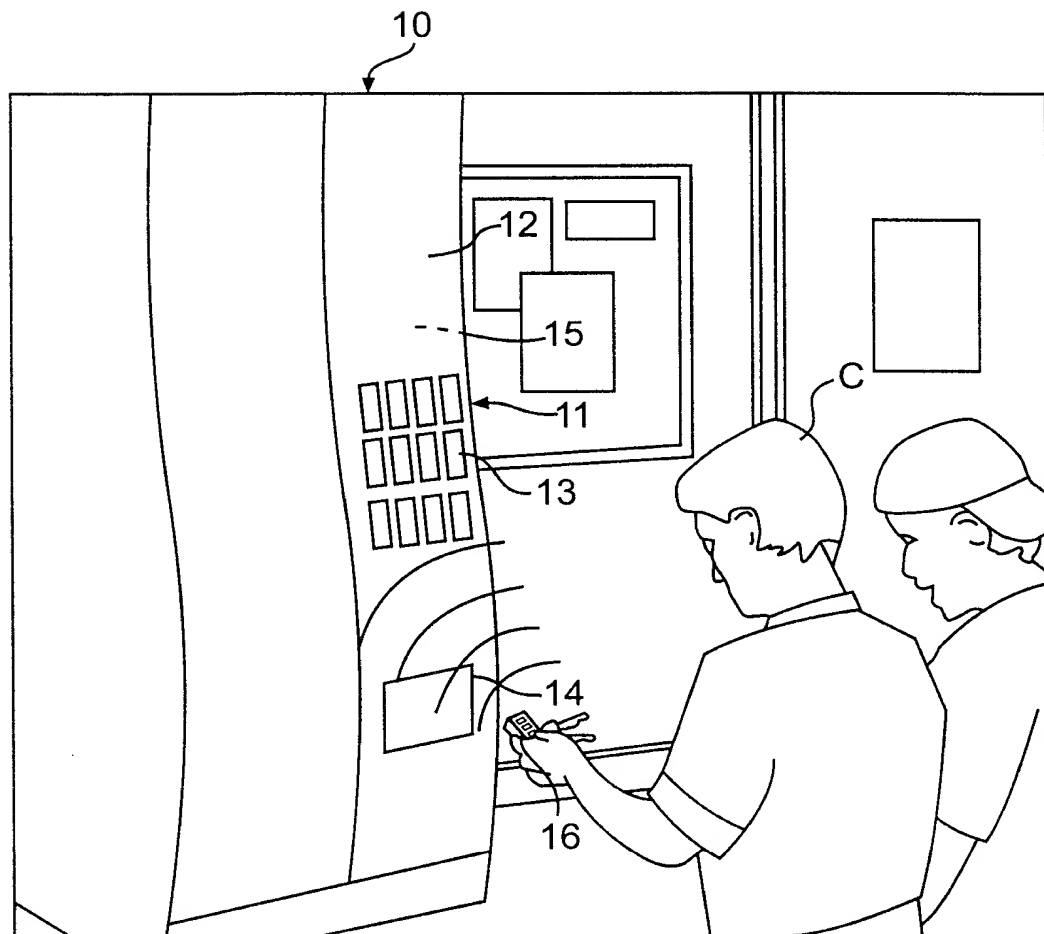
1 30. The method according to claim 26, wherein said step of
2 tracking consumer data includes accumulating points and
3 associating the points with the person.

1 31. The method according to claim 30, wherein the points are
2 based upon purchase amounts made by the person, the type of
3 goods or services purchased by the person, the location of
4 the terminal, or randomly awarded, when the person interacts
5 the transponder with one of the terminals.

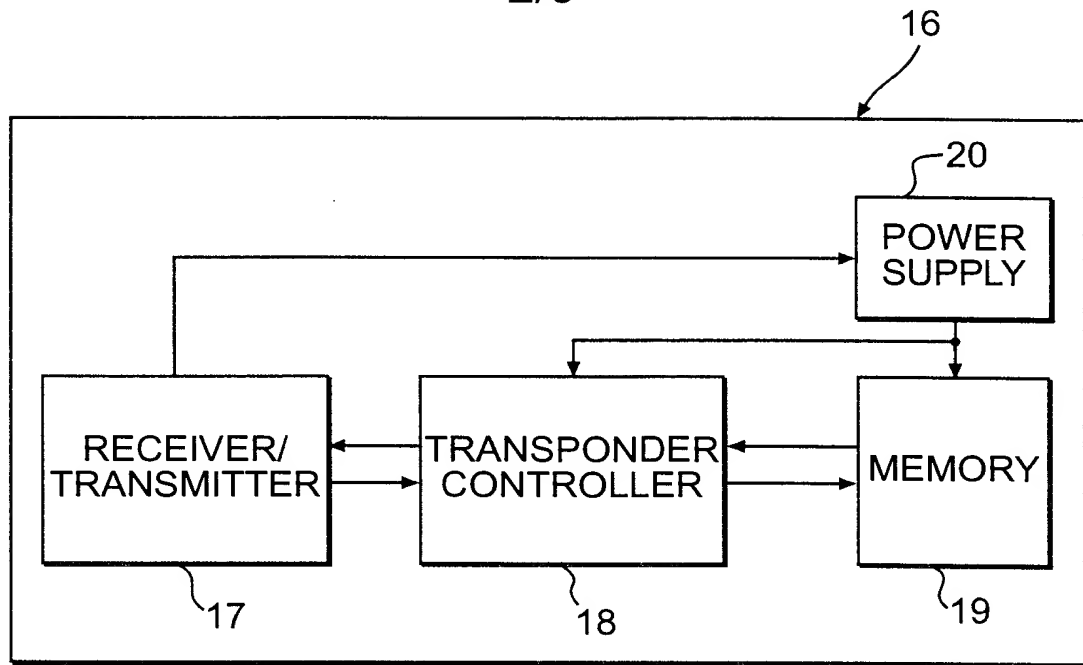
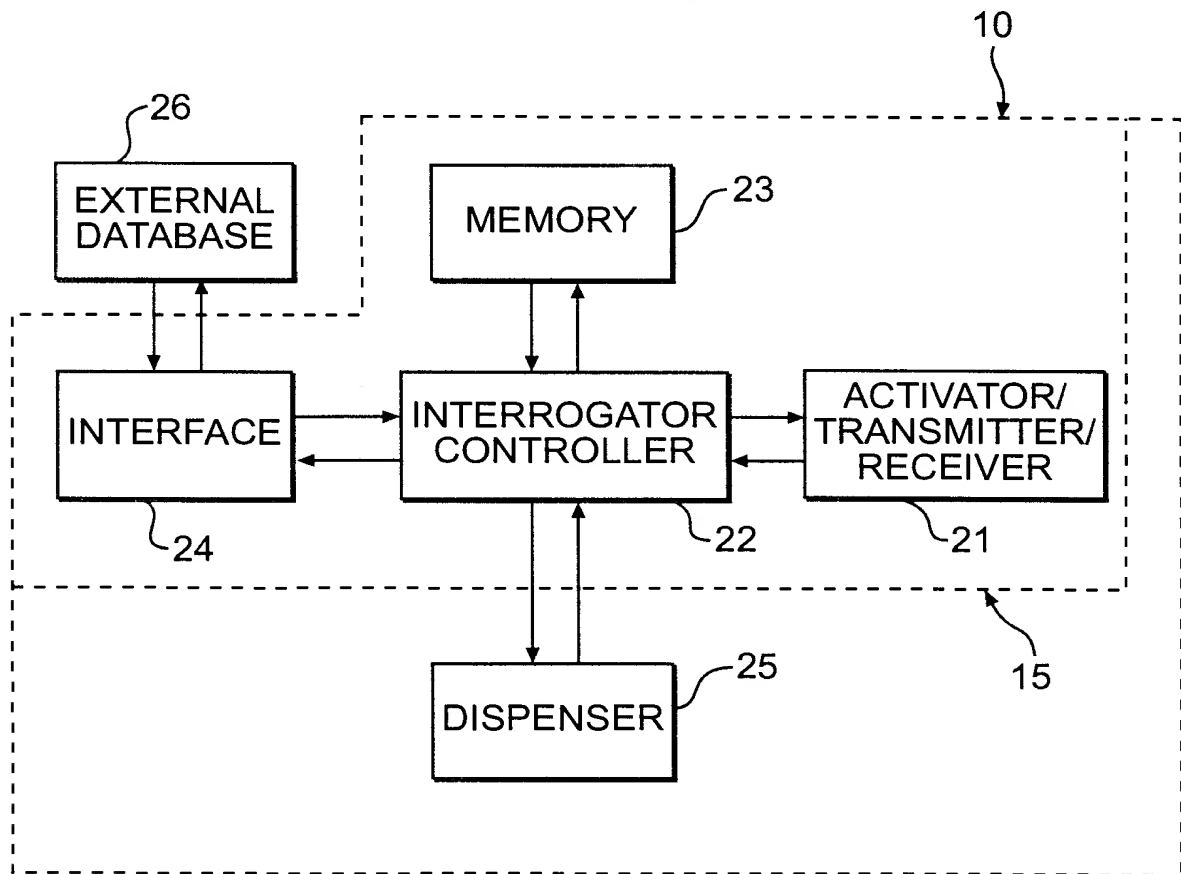
1 32. The method according to claim 30, wherein the number of
2 accumulated points can be accessed by the person online via
3 an internet connection, and the person can chose a reward

4 based upon the total number of points that person has
5 accumulated.

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**FIG. 1**

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**FIG. 2****FIG. 3**

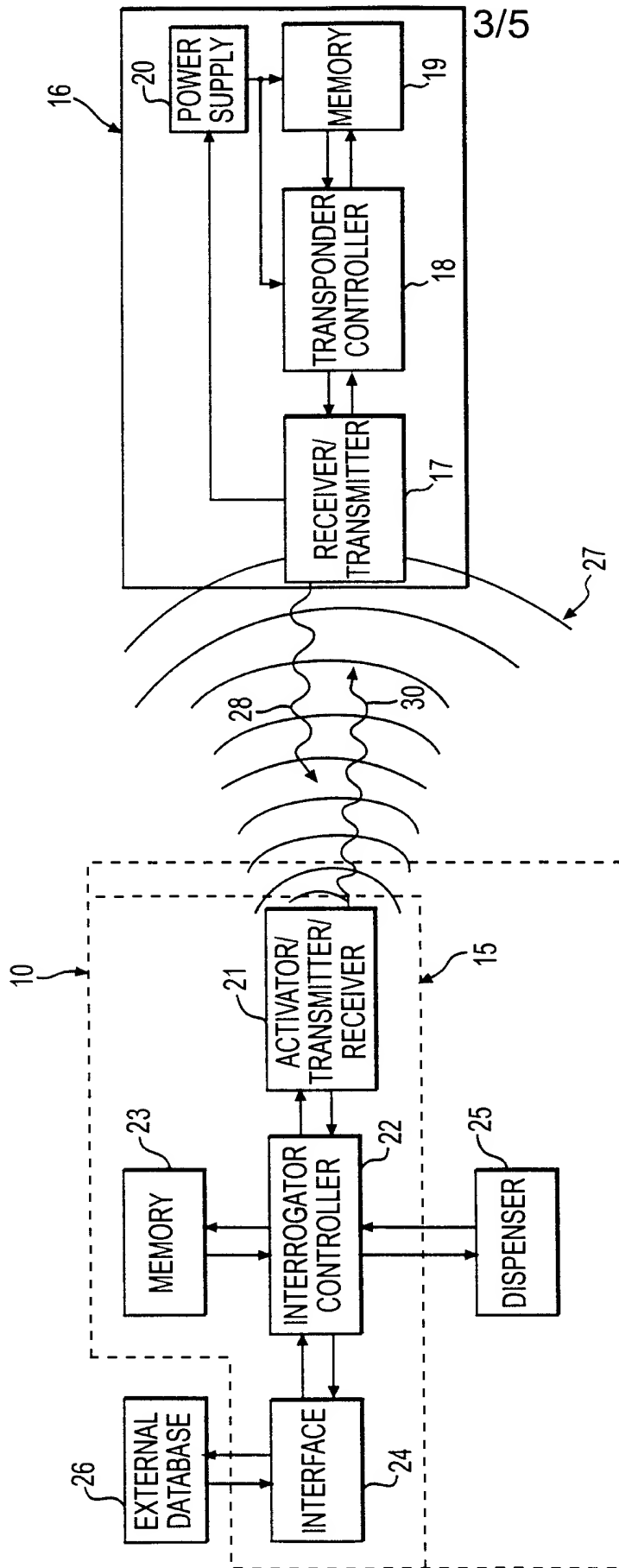
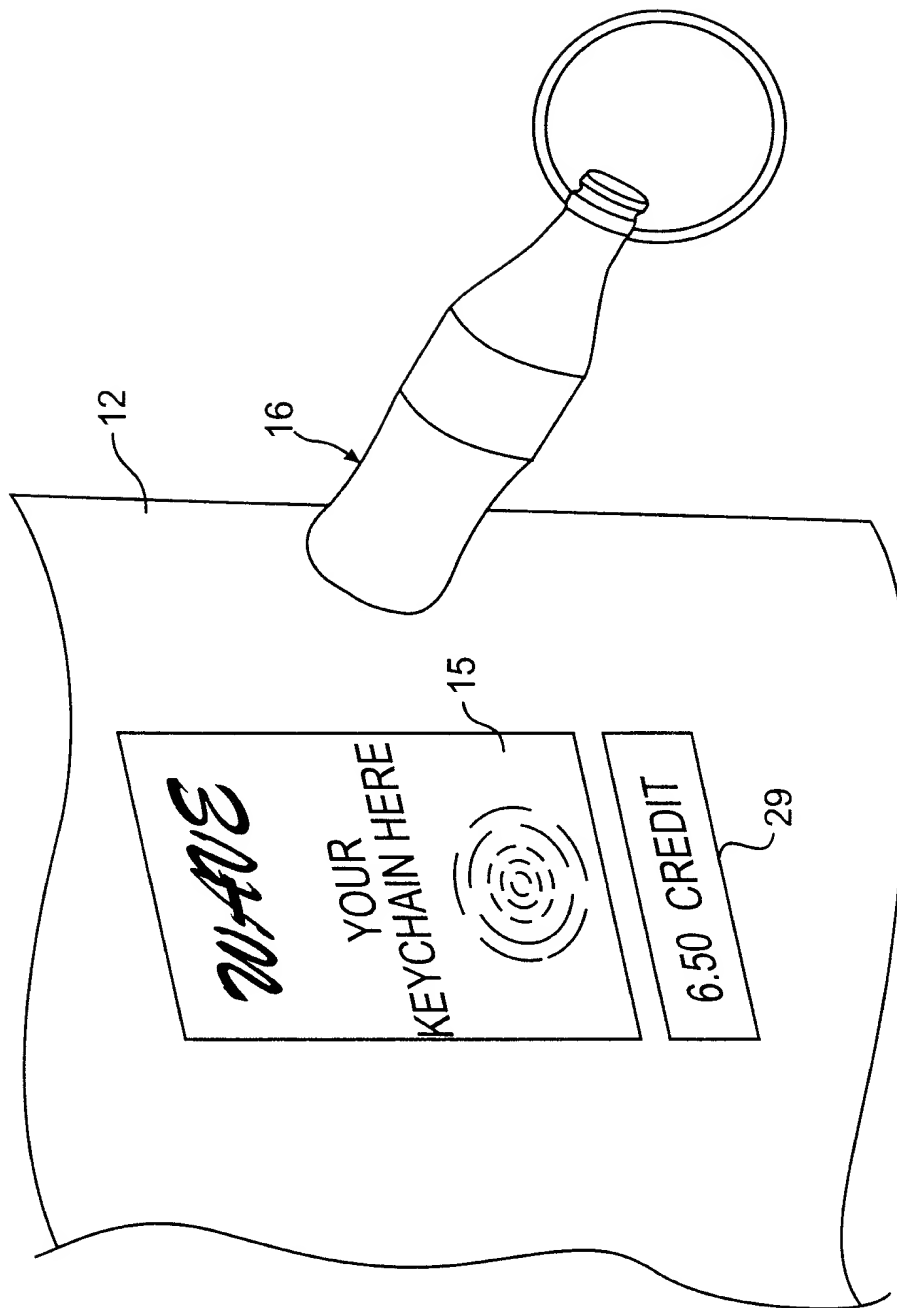
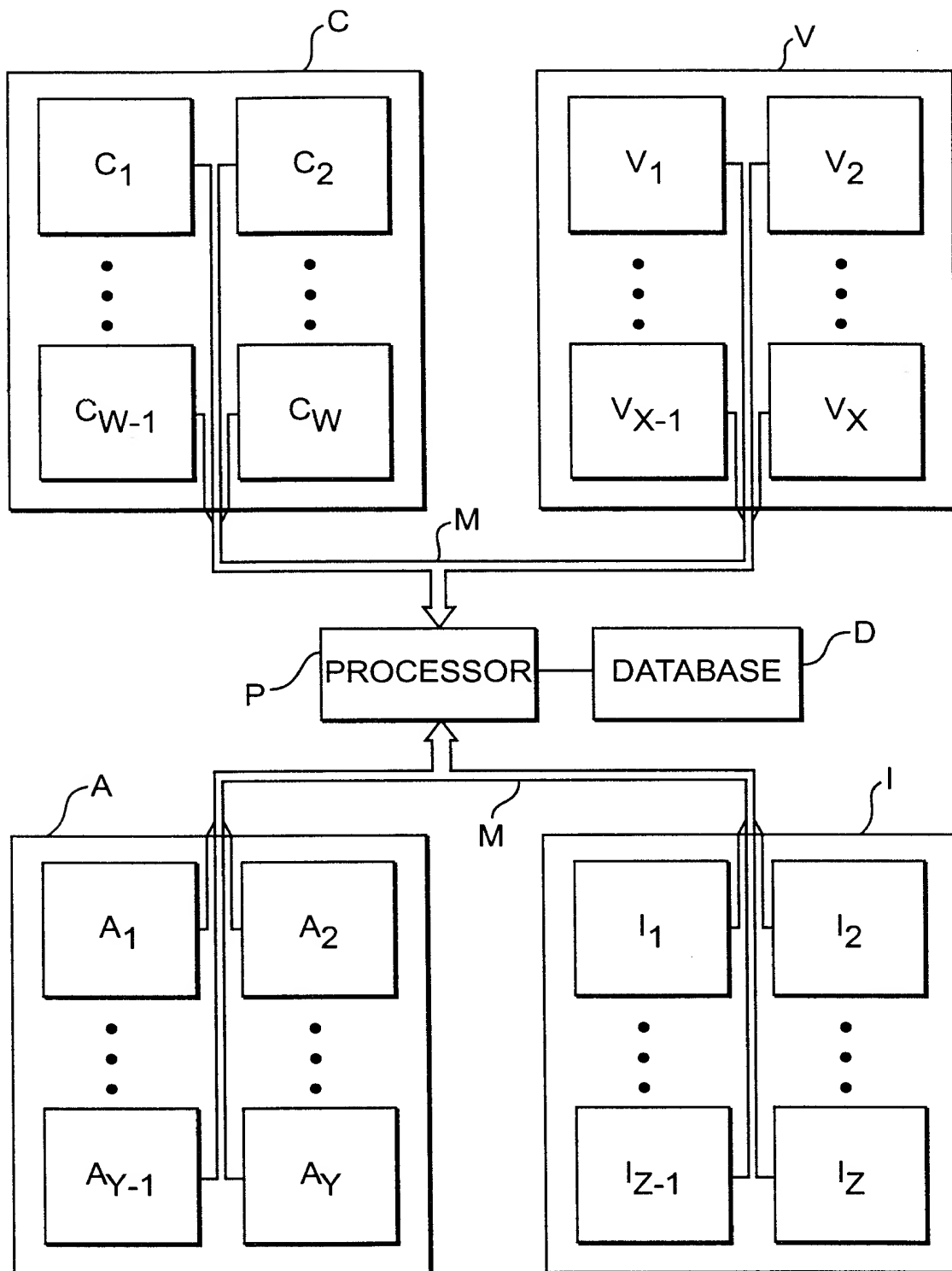


FIG. 4

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**FIG. 5**

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**FIG. 6**

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/05419

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G07F13/02 G06F17/60

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B67D G07F A47F G06F G07C G07B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>WO 97 24689 A (DRESSER IND ;MOBIL OIL CORP (US)) 10 July 1997 (1997-07-10)</p> <p>abstract; figures 1,8,9C,11B page 6, line 7 - line 17 page 35, line 12 - line 31 page 36, line 5 - line 10 -----</p>	<p>1,3,5,7, 9-12,15, 16</p>
P,X	<p>WO 99 16701 A (GILBARCO LTD) 8 April 1999 (1999-04-08)</p> <p>abstract; figure 4B page 1, line 7 - line 14 page 8, line 14 -page 9, line 1 page 20, line 5 -page 21, line 8 -----</p>	<p>1-3,5, 7-13,15, 16,21, 26,28-30</p>

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